This week we continue our studies of Chapter 4: *Random Variables*, from Ross 9^{th} edition.

Example 3d

120 students to take 3 buses. Bus 1 has 36, Bus 2 has 40, Bus 3 has 44. When the buses arrive, one of the 120 is chosen at random.

Define X as the number of students on bus that the student was chosen from. Find EX.

Example 7b

A machine fails with $p = .1$, find the probability that in a sample of $n = 10$, at most 1 item is defective. Compare the methods of binomial and Poisson. *What is the difference?*

Example 8c

For $X \sim Geometric(p)$, find $VarX$.

Theoretical Exercise 4.10

For $X \sim Binomial(n, p)$, show:

$$E\left[\frac{1}{X+1}\right] = \frac{1-(1-p)^{n+1}}{(n+1)p}$$

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